DOCUMENT RESUME

ED 189 078 SP 016 288

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TITLE Levels of Use and Extent of Implementation of New Programs in Teacher Education Institutions: What Do You Do?
PUB DATE Feb 79
NOTE 26p.: Paper presented at the annual meeting of the American Association of Colleges for Teacher Education (Chicago, IL, February 25-28, 1979).

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Administrative Change: Adoption (Ideas): Attitude Measures: *Change Agents: Higher Education: *Preservice Teacher Education: *Program Implementation: Teacher Education Programs

ABSTRACT

An eight-level table of Levels of Use (LoU) is employed to measure the adoption and eventual success of program innovations in teacher education institutions. Speculations on the success or failure of attempted innovations, backed with statistical analysis, are presented. (SAS)

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ED189078

Pre-Conference Draft

LEVELS OF USE AND EXTENT OF IMPLEMENTATION OF NEW PROGRAMS IN TEACHER EDUCATION INSTITUTIONS: WHAT DO YOU DO?

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Paper presented at the annual meeting of
the American Association of Colleges of Teacher Education,
Chicago, February 25-28, 1979

SP016288

LEVELS OF USE AND EXTENT OF IMPLEMENTATION OF NEW PROGRAMS IN TEACHER EDUCATION INSTITUTIONS: WHAT DO YOU DO?[1,2]

Gene E. Hall

Schools, colleges and departments of education are increasingly expected to implement new procedures, change programs and courses. The changes are in response to federal legislation, changes in accreditation criteria and in response to demands for increased fiscal accountability, as well as professional desires to increase quality. These changes are expected to occur at an ever increasing rate with diminishing resources and personnel to implement them. Faculty, administrators, and students are all left with the press of the expectation for change, but little in the way of know-how and resources to do it.

The Procedures for Adopting Educational Innovations (PAEI) Program at the Texas R&D Center for Teacher Education is attempting to study the change process as it unfolds in schools and colleges. The long-range goal of this project is to develop concepts and procedures that will assist change facilitators (e.g., administrators) and faculty in implementing innovations. PAEI research is based upon the Concerns-Based Adoption Model (CBAM) (Hall, Wallace, & Dossett, 1973) which views change as a process rather than being an event. Further, it is assumed that unit managers, such as deans and department chairpersons, have key roles to play as change facilitators if faculty are to be able to implement and fully utilize the many innovations and changes that

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[1]Paper presented at the annual meeting of the American Association of Colleges of Teacher Education, Chicago, February 25-28, 1979.

[2]The research described herein was conducted under contract with the National Institute of Education. The opinions expressed are those of the author and do not necessarily reflect the position or policy of the National Institute of Education, and no endorsement by the National Institute of Education should be inferred.

are desired.

In this paper, recent data collected in schools, colleges and departments of education in relation to the educational innovation of "instructional modules" will be used to explore questions in relation to the role of the change facilitator/unit manager in the change process. Issues related to managing the change process so that, in fact, change does occur will be explored. Levels of Use of the Innovation (LoU) data will be used to document movement or non-movement of faculties at different institutions in relation to the implementation of instructional modules. The strategies that were used to facilitate the change effort will also be described. The paper concludes with a brief discussion of some questions and issues that are raised from the set of cross-sectional/longitudinal studies that were conducted. Unfortunately, few clear cut recommentations can be made to assist battle-weary administrators. What the paper may do is to reaffirm some of their feelings and legitimize some of the frustration. However, there do seem to be a few patterns and hypotheses that may help a little.

THE CONCEPTS

Levels of Use of the Innovation

The concept of Levels of Use of the Innovation proposes eight different levels of behavior that an individual can demonstrate in relation to use or nonuse of an innovation. The levels range from the individual with no knowledge, taking no action in relation to an innovation, to the person who is demonstrating highly sophisticated, highly experienced, highly innovative use of the innovation. These levels have been operationally defined (Hall, Loucks, Rutherford, & Newlove, 1975). Figure 1 summarizes the overall definition of the Levels of Use and the decision points that separate each level. Note that

Figure 1

Levels of Use of the Innovation[3]

0 NONUSE: State in which the user has little or no knowledge of the innovation, no involvement with the innovation, and is doing nothing toward becoming involved.

I ORIENTATION: State in which the user has recently acquired or is acquiring information about the innovation and/or has recently explored or is exploring its value orientation and its demands upon user and user system.

II PREPARATION: State in which the user is preparing for first use of the innovation.

III MECHANICAL USE: State in which the user focuses most effort on the short-term, day-to-day use of the innovation with little time for reflection. Changes in use are made more to meet user needs than client needs. The user is primarily engaged in a stepwise attempt to master the tasks required to use the innovation, often resulting in disjointed and superficial use.

IVA ROUTINE: State in which use of the innovation is stabilized. Few if any changes are being made in ongoing use. Little preparation or thought is being given to improving innovation use or its consequences.

IVB REFINEMENT: State in which the user varies the use of the innovation to increase the impact on clients within immediate sphere of influence. Variations are based on knowledge of both short- and long-term consequences for clients.

V INTEGRATION: State in which the user is combining own efforts to use the innovation with related activities of colleagues to achieve a collective impact on clients within their common sphere of influence.

VI RENEWAL: State in which the user reevaluates the quality of use of the innovation, seeks major modifications of or alternatives to present innovation to achieve increased impact on clients, examines new developments in the field, and explores new goals for self and the system.

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[3]Excerpted from: The LoU chart: Operational definitions of Levels of Use of the Innovation. Austin: Research and Development Center for Teacher Education, The University of Texas, 1975.

the Levels of Use dimension focuses on the behaviors of individuals rather than their feelings. Another dimension of the Concerns-Based Adoption Model, named Stages of Concern About an Innovation (SoC) (Hall & Rutherford, 1976), focuses on the affective dimension of individuals through assessing their concerns in relation to the innovation.

In general, the Levels of Use progression is hypothesized to move from an orienting time to a decision to use, to a mechanical kind of use of the innovation, and ultimately to an integrated use of the innovation. The LoU dimension is not at all limited to classroom behaviors of the user, but takes into account behaviors at all times and in all places relative to the innovation. For example, the person at the Orientation Level is looking for information (e.g., at a professional meeting), considering the strengths and weaknesses of using the innovation (e.g., by talking with others), is involved in acquiring information (e.g., by reading brochures), and assessing potential gains and losses associated with use of the innovation (e.g., by estimating time and costs).

The kinds of behaviors that the innovation user demonstrates during the Orientation Level of Use are altogether different from the kinds of behaviors that would be found with innovation users at some other level. For example, at the Mechanical Level of Use, the user is looking for ideas and techniques to make use of the innovation more efficient, rather than soliciting general, descriptive information as s/he would be at the Orientation Level. At the Mechanical Level, also, there is disjointed and uncoordinated use of the innovation in the classroom. The user is heavily involved in logistical issues. The user's guide may be close at hand and referred to quite often, and planning is on a day-to-day basis.

Rather than LoU representing a description of adoption and implementation as application of the innovation in its pure form in a new setting, LoU focuses

on the underlying changes in use, the "adaptations," if you wish, the individual users make. For example, changes in management techniques are indicative of the Mechanical Level. The presence or absence of changes and the kinds of changes that are made are keys to determining at what Level of Use an individual is currently functioning. Even the most teacher-proof curriculum box entails the user's development of new skills and varying the approach to using the innovation as these skills are learned and problems are encountered. Definition, description, and analysis of how the individual uses the innovation and adapts it are the focus of LoU.

Although the Levels of Use dimension is laid out in a linear fashion, it is not proposed that an individual must move automatically in lock-step fashion through each of these levels. The thrust of the research reported here and in other papers is to test the developmental progression of individuals as they move from level to level and to determine to what extent the development across these levels is sequential versus varying in other perhaps unpredictable ways. In earlier papers, the initial verification that the different Levels of Use of the Innovation exist has been documented (Hall, 1975; Loucks, 1976). At this time, individuals at each of the eight Levels of Use have been identified with several different innovations so that it is at least initially verified for both process and product innovations that the eight different Levels of Use exist. The question still remains as to just how developmental the movement is across these levels and in what ways movement and non-movement can be influenced through interventions and institutional conditions.

Measuring Levels of Use of the Innovation

Levels of Use are assessed using a focused interview procedure. The Levels of Use Interview does not involve a strictly structured set of questions, but rather it uses a branching format based on the Decision Points and the

operational definitions of the levels. An interview procedure was developed since the concept of Levels of Use entails so many different types of behaviors, and these take place in so many different locations. Straightforward classroom observation might be possible to assess Levels of Use in relation to the performance of the individual user in the classroom; however, use of an innovation entails outside-of-class preparation, review and examination of materials, discussion with colleagues, coordination, and planning activities that would not be detected through pure classroom observation. The only cost-feasible approach seemed to be an interview procedure.

The term "focused interview" is used advisably here since the interviewer, through the use of specific interview questions, a branching format, and carefully designed follow-up probes, is able to elicit a great deal of information about the various activities and performances of an individual in relation to an innovation. In addition to assessing the overall Level of Use, the Levels of Use concept is divided into eight categories which provide for additional data points in the conducting of an interview. These categories cover such areas as the individuals' knowledge of the innovation, the kinds of information that they are seeking, their plans, and what they share with others, as well as their actual performance in the classroom with the innovation. It should be noted that the LoU Interview covers nonusers as well as users of the innovation under study.

In the research of the Procedures for Adopting Educational Innovations Program, trained interviewers have conducted more than 3,000 interviews with twelve different innovations. A trainer's manual has been developed to provide the basic information which is required of others who are going to be involved in using the Levels of Use Interview (Loucks, Newlove, & Hall, 1976). Each interview is tape-recorded and subsequently rated by a second trained rater as

a part of data collection procedures. For the data reported here, interrater reliability coefficients ranged from .87 to .96. A validity study of the Levels of Use Interview procedure using an ethnographic methodology resulted in correlations of .98 between ratings given by an ethnographer who had spent one complete school day in observation of an individual with ratings obtained through the focused interview procedure. The LoU measurement procedure development and reliability findings are summarized by Loucks (1977).

Use of Levels of Use

The concept of Levels of Use of the Innovation and data collected with the measurement procedure have several different uses. Evaluators are finding that knowing whether or not each individual within the treatment group is in fact a "user" of the innovation and that all individuals in the comparison group are "nonusers" of the innovation to be very useful data (Hall & Loucks, 1977). Levels of Use data can also be used by change facilitators as a diagnostic tool to assess what points individual faculty and groups of faculty are so that interventions can be targeted toward their present Level of Use. The Levels of Use data also serve as a benchmark to document the rate of movement or non-movement of faculty in relation to use of a particular innovation. In addition, by collecting LoU data over time it is possible to trace movement and effects of various interventions.

Analysis of Interventions

When change facilitators are introduced to the concept of Levels of Use, one of their immediate questions is, "If a person is at a certain LoU, what do I do?" Levels of Use provides a very handy and practical way of describing the behaviors of various individuals in relation to an innovation. However, a statement of Levels of Use in and of itself does not tell the change facilitator what to do to cause movement in Level of Use. Intuitively there are

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some logical actions that would seem to be more appropriate at different Levels of Use; however, the prescriptions are not explicit by just knowing a Level of Use rating.

For research purposes, the PAEI team have developed a definition of an intervention, which is:

> An intervention is an action or event or a set of actions or events that influences use of the innovation. An event is distinguished from an action in that an event does not have an intervenor.

Present PAEI research is focusing on the development of a "taxonomy of interventions" (Hall, Zigarmi, & Hord, 1979). It is hoped that in time, once development of the intervention taxonomy is complete, it will be possible to draw tighter relationships between a specific type of intervention and the Level of Use of the individual. It may be possible to recommend viable alternative interventions to change facilitators for individuals at a certain Level of Use. At this time, all that can be done is to look at longitudinal data and develop hypotheses about what would be more appropriate or inappropriate, depending upon the Levels of Use data that was provided and what we know from clinical experience about facilitating the change process in institutions of higher education and schools.*

The prototype intervention taxonomy presently has two major "wings" to it. One wing focuses on the sponsored interventions that change facilitators knowingly make to support a change effort. Sponsored interventions range from the incident level to the larger overall game plan of the change effort. Intermediate levels of sponsored interventions include tactics and strategies. It

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*There is a very large set of dilemmas around the ethical responsibility and limits of change facilitator-sponsored interventions. We are beginning to examine these dilemmas in our research, and practitioners need to give direct attention to their responsibilities, limits, and liabilities in relation to the ethical issues of intervening.

is proposed in the Concerns-Based Adoption Model that change facilitators should be designing and contemplating interventions and the effects of interventions in advance of their occurrence. Thus, the change facilitator is expected to have a game plan. This game plan would include specification of the key strategies (e.g., training, materials, resource support, faculty assignments) that will be used to facilitate the change process. It is also assumed that the game plan and strategies will need to be modified as the change effort unfolds.

At the smallest level of intervention, the incident level, the change facilitator will be less able to do advance planning. However, it appears that success of the change effort depends on how well the change facilitator handles the incident level interventions. Interestingly enough, it appears that at different Levels of Use different emphases need to be placed upon the use of different types of incident level interventions. For example, at LoU III, the Mechanical Level, face-to-face contact and information about how-to-do-it's and hand-holding seem to be more effective, while for an individual at LoU IVB, Refinement Level, the sending of notes and memos seems to work as well.

THE STUDY

In this paper, field notes will be used to describe various strategy level interventions that were used in the field sites where Levels of Use data were collected over a two-year period. In most cases game plan level intervention descriptions, as well as some incident interventions will also be described. The purpose here is not to emphasize the classification of different levels of interventions, but rather to develop hypotheses about the relationships between movement and non-movement in Levels of Use and the interventions that were used at the field site. It is hoped that from analyses of this type that in the future it will be possible to make recommendations of alternative

interventions that an administrator or other change facilitator could select from in order to facilitate movement towards institutionalization of an innovation.

Cross-Sectional Study

During the fall of 1974 faculty at twelve state colleges and universities involved in the training of teachers were interviewed relative to the innovation of instructional modules. This sample was deliberately selected to include institutions and individuals who were known to be users or nonusers of the innovation. The plan at the outset was to then change the cross-sectional study into a two-year longitudinal study with repeated data collection during the subsequent spring and second academic year. The overall Level of Use distribution for the fall of 1974 across all individuals in all twelve institutions is summarized in Table 1.

	Level of Use (in percent)								
	0	I	II	III	IVA	IVB	V	VI	N
%	10	30	10	8	22	11	7	3	351

Table 1. Percentage Distribution of Overall Level of Use of Instructional Modules during the Fall 1974 at Twelve Colleges and Universities.

Key interpretations of these data include the fact that individuals were identified at each of the Levels of Use. As had been hypothesized, it is possible to identify individuals at each Level of Use and to distinguish between the Levels of Use in field sites. A second and perhaps more striking finding is the fact that the largest single category of users are Routine LoU

IVA users!? It appears that nearly 50 percent of the users of an innovation at any one time in a stratified sample will be at LoU IVA. Also, it can be observed that few individuals are found at Levels of Use V, Integration, and VI, Renewal. These Levels of Use appear to be relatively rare for all innovations that have been studied to date.

These data are broken out in a slightly different way in Table 2. In this table the Levels of Use from the cross-sectional sampling are broken out

	Level of Use (in percent)								
Years of Experience	0	I	II	III	IVA	IVB	V	VI	N
none	18	62	15	1	2	1	1	0	171
1	3	8	10	18	32	18	10	.7	63
2	0	17	0	9	45	17	9	.7	47
3	6	6	3	9	31	28	9	.7	32
4 or more	9	9	0	12	30	12	24	.3	33
									292

Table 2. Distribution of Levels of Use by Years of Experience with the Innovation of Instructional Modules.

according to years of experience with the innovation. Note that the N is somewhat smaller here since we did not have the demographic information on user experience from all individuals that we had Levels of Use interview data from. Several trends can be observed in the data. First, it can be observed that the highest occurrence (18%) of LoU III, Mechanical, level users was during the first year of use. It also should be noted that some four-or-more-year users of modules are observed at the Mechanical Level of Use. Another observation

would be that LoU IVB, Refinement, and above individuals increase as years of experience with the innovation increase. And, again, the number of LoU VI individuals is relatively rare in the population as a whole.

Longitudinal Data--Some Case Studies

The Levels of Use data that were collected in the fall of 1974 provide a first cross-sectional look at faculty in the institutions in the study. During the spring and fall of 1975 and the spring of 1976, the LoU data were again collected at these institutions. In order to look at the relationship between movement and non-movement in Levels of Use and interventions, the data collected at several institutions in these longitudinal studies will be examined. In interpreting these data inferential statistics will not be used. Rather, the movement and non-movement of the groups as a whole and identified individuals within the groups will be looked at and hypotheses will be developed about the causes of the movement as it relates to the interventions that we know of. These analyses are intended as exploratory and will help guide our future research as we look more closely at the relationship between selected interventions and movement and non-movement in Levels of Use. Each set of site data is for those subjects who had been interviewed each of the four times.

Sites 8 and 9--"Utopia"

In Table 3, two-year longitudinal LoU data are presented for Sites 8 and 9. Site 8 is a secondary department of teacher education at a large university, and Site 9 represents the curriculum instruction faculty and other related faculty from the college of education of another large university. The data in these two institutions represent an idealistic state. Nearly all faculty are users of the innovation, and a surprisingly large proportion of the faculty are at LoU IVB and above. Not only are there occurrences of Refinement Level of Use

Site 8
LoU Distribution of Department of Secondary Education Faculty

	0	I	II	III	IVA	IVB	V	VI	
		Nonuse				Use			N
Fall 1974	1	5	0	3	6	3	3	0	21
Spring 1975	1	5	0	0	7	2	4	2	
Fall 1975	1	4	3	1	4	4	3	1	
Spring 1976	3	0	1	0	6	2	3	6	

Site 9
LoU Distribution for Department of Curriculum and Instruction

	0	I	II	III	IVA	IVB	V	VI	
		Nonuse				Use			N
Fall 1974	0	0	2	3	8	6	4	3	26
Spring 1975	0	0	2	0	8	6	7	3	
Fall 1975	0	1	4	2	9	8	1	1	
Spring 1976	0	2	3	1	6	10	3	1	

Table 3. Ideal LoU Distribution for Implementation of Instructional Modules at Two Large Universities.

in faculty, but also the proportion stays high during the two years of the study.

Our interpretation of the reason for these LoU distributions would be the unit manager, in particular, and the institutional commitment, in general. In the case of Site 8, the department chairperson has had an extended history of commitment to the use of instructional modules. He has systematically recruited, selected, and rewarded faculty on a continuing basis for their involvement in the undergraduate teacher education program. They have also, from time to time, undertaken programmatic revision of the content and delivery systems involved in their teacher education program. The strategy has been one of total

department commitment to the thrust. At Site 9, from the dean to the department chairperson to key senior faculty, there is a history of intense commitment and priority assigned to and reward for involvement in the undergraduate program and the development of instructional modules and competency-based delivery systems. The institution has used a combination of experimental programs, super-star faculty, and priority resource allocations to back the effort.

From an intervention point of view the hypotheses that jump most clearly from these data are:

Hypothesis A. The unit manager, that is, the dean or department chairperson, is a key to maintaining high Levels of Use in a faculty.

Hypothesis B. Having a large number of faculty at a higher Level of Use creates a "critical mass" or a momentum for maintaining Refinement Levels of Use across time.

What we cannot document from these data is how the faculty previously moved from nonuse to use.

Site 3--"The Starting Gun Is Not Fired"

As the following data will illustrate (Table 4), administrative and institutional commitment do not appear to be enough to guarantee that use of the

Site 3
LoU Distribution for a Faculty at a Regional State University

	0	I	II	III	IVA	IVB	V	VI	N
		Nonuse				Use			
Fall 1974	2	14	2	3	3	1	0	0	25
Spring 1975	3	10	4	1	3	2	1	1	
Fall 1975	8	10	2	0	2	0	2	1	
Spring 1976	15	2	1	1	3	2	0	1	

Table 4. The Starting Gun Is Not Fired.

innovation will begin and expand. The data from Site 3 illustrate this point clearly. In this institution the dean voiced continual commitment to Competency-Based Teacher Education and the use of instructional modules. Other strategies employed included assigning responsibility for the implementation of CBTE to a faculty member and starting an experimental program with a small number of faculty. As the Levels of Use data in Table 4 illustrate, at the beginning of the longitudinal study interest in and active consideration of instructional modules was high (14 of 25 individuals at LoU I). However with time there was a gradual decreasing in the number of nonusers at LoU I. Regression back to LoU 0 increased until at the end of the second year 15 individuals were at LoU 0, and only 2 were at LoU I.

During the two years of the study, the dean continually expressed interest and support. Workshops were held for the faculty and continual public announcements were made to encourage the beginning of use. However, for some reason the "starting gun" was never fired. As can be observed, there was a nucleus of faculty at use levels who were primarily in one sub-unit. They did maintain a commitment to use of instructional modules. During the two years there are only four instances that can be identified where individuals at nonuse levels (LoU 0, I or II) moved to use levels.

> Hypothesis C. The totality of interventions that result in movement of faculty requires more than the unit manager expressing strong commitment to the idea at regular intervals.

Why wasn't there movement when administrative commitment was high? What can cause movement of faculty across the nonuse/use decision point?

Site 52--"The Building Is Coming"

Site 52 (Table 5) provides an interesting contrast to Site 3. At Site 52 at the beginning of the study, there was some institutional commitment and a

Site 52
LoU Distribution for Faculty at a Small State College

	0	I	II	III	IVA	IVB	V	VI	N
		Nonuse				Use			
Fall 1974	1	11	0	0	2	0	2	0	16
Spring 1975	3	3	5	0	2	2	1	0	
Fall 1975	4	4	5	0	2	1	0	0	
Spring 1976	4	2	7	0	1	0	1	1	

Table 5. The Building Is Coming.

faculty member assigned to provide a leadership role for the development of instructional modules. However, the dean and other administrators were not clearly advocating the movement. Some were against; more were standing up too tall. During the fall of 1974 a high number of individuals were at LoU I, Orientation. These individuals then distributed themselves across the nonuse levels during the spring of 1975 and the fall of 1975, from no movement towards use. Curiously enough, it is not until the spring of 1976 that there is a sharp movement towards use with seven individuals demonstrating LoU II behavior.

In this institution the key intervention seems to be the imminent opening of a new building that is designed for the use of instructional modules. As the move into the building arrives, the expectation that instructional modules would be a part of the instructional delivery system in the building begins to have affects. Thus, in this case, although the chief administrators were not overly advocating and supporting the move towards the innovation, they were also not against the move, and the event of moving into a new building appears to be responsible for finally having faculty make moves towards use of the innovation.

Hypothesis D. A major change in the allocation of resources can trigger use of an innovation.

Unfortunately, it does not seem possible in the real world to open a new building every time implementation of an innovation is desired or required. However, these data do suggest that administrative support may not always be sufficient and that at the same time institutional commitment, in whatever form it takes, appears to be a necessity if faculty are to move across the line from nonuse to use.

Site 1--"It's a Dichotomous World"

Site 1 illustrates another theme in the data (Table 6). At Site 1 there is a large group of nonusers and a large group of users, and never the twain shall

Site 1
LoU Distribution for a Faculty at a Regional State University

	0	I	II	III	IVA	IVB	V	VI	N
	Nonuse					Use			
Fall 1974	1	22	8	6	7	1	1	0	46
Spring 1975	3	18	3	10	9	3	0	0	
Fall 1975	8	12	7	7	7	2	3	0	
Spring 1976	13	12	0	8	8	5	0	0	

Table 6. It Is a Dichotomous World.

meet. Before the fall of 1974 the dean had continually expressed commitment and allocated institutional resources to begin movement towards competency-based teacher education. As a part of this movement, faculty were provided with orientation sessions and workshops in instructional modules. There was the hope many faculty would become involved across the campus, not just those principally

responsible for methods courses in student teaching. There was continual administrative testimony from the dean. A key faculty slot was assigned to be a leadership position in providing technical assistance to faculty and to encourage their becoming involved in using instructional modules and other aspects of CBTE. A small nucleus of faculty were identified to begin an experimental program.

Even with all of this activity, the incidents of LoU 0 Nonuse individuals in the longitudinal study gradually increased during the two years of data collection. The incidents of LoU II Preparation people decreased, and in the spring of 1976 there were no individuals at LoU II. Thus, in general, the nonusers moved from Orientation LoU I at the beginning of the study to nonuse LoU 0 at the end of the study.

Concurrently, the other camp of individuals in the faculty, the users of instructional modules, had a gradual movement toward LoU IVB, Refinement. That number gradually increased during the time, however, Mechanical LoU III users continued to exist and no movement to LoU V and VI was observed during the two years of the study.

Hypotheses E. Change in higher education takes time, lots of time.

It appears that there are two groups of faculty, and neither crosses the line from use to nonuse or nonuse to use. Clearly, the "laggards" need special attention. Exactly what form of interventions these are is not clear from the case studies here. In this case there was a core group of users who are committed and using the innovation. Why did the others not become involved? At Site 9 we know that new faculty quickly became users of the innovation, while at Site 1 the nonusers did not move towards use. Both institutions have many of the same characteristics in terms of attractive facilities, strong leadership in the dean's office, and institutional commitment. One difference may be that in

Site 1 the faculty are more provincial while in Site 9 the faculty are much more sophisticated in the area of the innovation due to the arrival of several superstars early in the change effort. An alternate interpretation might be that in Site 1 the innovation was inappropriate for many of the nonusers, although this explanation seems somewhat remote.

Summary and Discussion

In the preceding tables and discussion it has been possible to illustrate how Levels of Use can be used as a benchmark to mark the movement and non-movement of individuals as a change process unfolds. Unfortunately, the anecdotal data that we have to go with the LoU data from these various institutions does not fully explain movement and non-movement either at these institutions or in any generalized way. Many questions are left unanswered in relation to the question, "What do you do?"

Hopefully, the data will help illustrate the problems that frustrate so many administrators. Facilitating change is clearly a widespread, little understood dynamic process. Perhaps some day research will be able to develop sophisticated prescriptions to assist change facilitators in intervening. For now, hopefully, these beginning research steps will point out that perhaps help is on the way.

Some interventions appear to make a difference. However, facilitating and managing the change process in and of itself is multivariate and complex. It appears to take more than one strategy, tactic, or element to make up an entire game plan of change that is successful. At this point we can only nominate some of the key aspects of interventions and types of interventions that appear to be necessary to facilitate movement in Levels of Use. The following are a select few of these and are offered very tentatively as hypotheses that clearly need further testing, both empirically and in clinical practice.

1. Institutional commitment to the innovation is important, but in and of itself, not enough. At several of the institutions cited, regular spoken commitment by the unit manager that the use of the innovation was clearly important and fit in with institutional goals was done. For many individual faculty there was momentary active looking at the innovation, but shortly there was movement back to LoU 0 Nonuse. Without this commitment, as was illustrated in Site 52, little activity takes place. However, continued expression of commitment by the unit manager in and of itself does not appear to be enough to move faculty from nonuse to use.

2. Change is a process. In all institutions cited, as well as all other data collected in our research, it is clear that change is not accomplished instantaneously. Time is involved and the process must unfold. Clearly it unfolds at a different rate for different individuals. The change facilitator must anticipate that some individuals will move quickly towards use of an innovation, while others will lag far behind. What the interventions should be for late adopters is not clear. Career-long nonuse may not be acceptable, but how fast can movement toward use be encouraged? The individual experiences a process of change as does the institution as a whole. Somehow change facilitators must keep in mind the gestalt of force of the entire institution, while at the same time they attend to various sub-units and individuals within it.

3. Developing a critical mass is essential. It appears that momentum is a key factor in whether individual faculty will become involved in a change effort. Attempting to develop this critical mass is very much like attempting to push a stalled car by hand. It takes a great deal of effort to get the car to begin to roll. To get the car to roll faster requires more effort, but once it is rolling it appears it will keep rolling to some extent by itself. The rolling car is equivalent to the critical mass of individuals that must be

involved with an innovation. That critical mass can make it possible for other faculty to join in more easily. The critical mass also seems to be able to tug along some of the laggards in the system.

It is important to note that it does not appear that the critical mass is defined as a quantitative majority of the individuals within the institution. It clearly needs to be an opinion leadership majority but this does not mean that in terms of absolute numbers that the nonusers have to be outnumbered before change can occur.

4. Indicating institutional commitment to change is an ongoing activity. Movement from nonuse to use does not happen over night. A one-time announcement in the fall faculty meeting that an innovation is a priority is not sufficient. Establishing a committee to look into it will not work, especially if the committee has no due date and what will follow is not made very clear. Rather, there has to be ongoing efforts and actions that facilitate and demonstrate the use of the innovation as a priority. Clearly, offering resources and rewards for use of an innovation is one direct way to demonstrate the priority that the innovation has.

5. A corollary of 4 is that the change facilitator must keep change pressure on. Especially in higher education, it is quite easy for faculty to wander off into many unassociated directions. If there is to be an institutional (i.e., programmatic) commitment to a certain direction or a certain change effort, then there must be continual and selective pressure applied that will facilitate nearly all faculty moving in that direction. This requires that many "incident" level interventions must be delivered. There must be small talks with individual faculty, constant sending of memos, faculty feedback on evaluations, faculty assignment to courses, space, who gets to travel on trips, etc.; all of which consistently indicates the direction of the change effort.

Failure to coordinate all of these incident level interventions will result in faculty wandering and there not being a steady pressure to move in the planned direction.

6. Individuals at LoU III Mechanical need special attention. People at a mechanical Level of Use are working through the disjointedness and the awkwardness of trying to use the innovation. It is at this time that someone who has patience and perserverance must be available. They will need to offer a combination of hand-holding and how-to do-it tips to assist in resolving the LoU III problems. Mechanical Level of Use is something that is experienced as a part of most change efforts, however, in many instances we fail to attend to the problems that are associated with this time in change. Those institutions in our studies that assign experts with authority and responsibility to assist individuals in their early use of the innovation have much more success, especially in relation to resolving management-type concerns.

The study and data that have been reported here represent one of our first attempts to interrelate specific interventions and Levels of Use data. We know at this point that Levels of Use can be used as a marker to document movement and non-movement in the change effort for both individuals and an institution as a whole. We also are hypothesizing that Levels of Use can be a key diagnostic tool for developing prescriptions, that is, the selection of interventions that would be most facilitative at given times.

What we do not have at this point is documentation of a success story of change in higher education. It appears from the analyses that we do have data from some institutions, such as Sites 8 and 9, which show that they had already established a critical momentum and had movement underway when we began our collection activities. In other institutions we were there when attempts were

made, but the attempts did not result in large movement across the dichotomous world of the users and the nonusers. In another case there appeared to be more regression than movement. We are at somewhat of a loss to explain why this happened since some of the key interventions that we hypothesized to be important were observed.

Clearly change in higher education is complex and in need of much further study. One is often reminded of the quote that has been attributed to Freud that goes, "Trying to change a university is like rearranging a cemetery." Institutions of higher education have not had to grapple with much change in the past. Unfortunately, for them they are entering a time when society is demanding changes. It clearly is a time when many studies can be conducted on the realities of change as they are actually experienced. Unfortunately, the research base knowledge that we should have to help administrators in higher education and others responsible for facilitating change is in very limited supply. There are certainly going to be plenty of opportunities for the change researcher to learn over the upcoming years. Unfortunately, the learning is going to occur at the expense of many dedicated administrators.

References

Hall, G. E. The effects of "change" on teachers and professors--Theory, Research, and Implications for Decision-Makers. Paper presented at the National Invitational Conference on Research on Teacher Effects: An Examination by Policy-Makers and Researchers, Austin, Texas, November, 1975.

Hall, G. E., & Loucks, S. F. A longitudinal investigation of individual implementation of educational innovations. Austin: Research and Development Center for Teacher Education, The University of Texas, 1977.

Hall, G. E., Loucks, S. F., Rutherford, W. L., & Newlove, B. W. Levels of use of the innovation: A framework for analyzing innovation adoption. The Journal of Teacher Education, Spring 1975, 26(1), 52-56.

Hall, G. E., Wallace, R. C., Jr., & Dossett, W. A. A developmental conceptualization of the adoption process within educational institutions. Austin: Research and Development Center for Teacher Education, The University of Texas, 1973.

Hall, G. E., Zigarmi, P. K., & Hord, S. M. A taxonomy of interventions: The prototype and initial testing. Paper to be presented at the annual meeting of the American Educational Research Association, San Francisco, April 8-14, 1979.

Loucks, S. F. An exploration of levels of use of an innovation and the relationship to student achievement. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, April 1976.

Loucks, S. F. Levels of use of the innovation: The conceptualization and measurement of a variable useful for assessing innovation implementation by individuals. Paper presented at the annual meeting of the American Educational Research Association, New York, April 1977.

Loucks, S. F., Newlove, B. W, & Hall, G. E. Measuring levels of use of the innovation: A manual for trainers, interviewers and raters. Austin: Research and Development Center for Teacher Education, The University of Texas, 1976.